Swaziland Legacy Document

Strengthening physical and human resources for Health Care Waste Management in Swaziland

Snapshot

From 2011 to 2014, SCMS assisted the Swaziland Ministry of Health in bringing its health care waste management system up to international standards by updating outdated, long-ignored guidelines for handling medical waste, and funding upgrades to incineration infrastructure at seven health facilities. SCMS's support ultimately provided Swaziland with a resolute platform for "cradle-to-grave" health care waste management spanning the entire range of facility-based medical services in the country.

Category	2011 – The way things were	Present - How far Swaziland has come
Processes		
Health Care Waste Management Guidelines	No specific guidelines on health care waste management were in place in Swaziland. General waste regulations issued in 2000 served as the primary resource on the overall subject of waste treatment, but lacked explicit provisions for Health Care Risk Waste. Moreover, Standard Operating Practices for most aspects of waste handling did not exist.	Developed with lead technical assistance from SCMS and based primarily on South African national standards, the Ministry of Health published the *National Guidelines on Health Care Waste Management* and *Laboratory Waste Management Guidelines* in 2013. SCMS also led development of key companion resources to facilitate implementation and utilization of the guidelines, including: Information, Education, and Communications materials; a Monitoring & Evaluation toolkit; and a *National Implementation Strategy* that will be carried forward with support from the World Bank.
Transport of Health Care Risk Waste	Health care facilities without incinerators dangerously mixed infectious waste and general waste for on-site destruction via open pit burning. There was no system for transporting health care risk waste to appropriate incineration locations and no certification program for licensing transport companies.	Based on the conclusions of an SCMS study, existing incinerators at 10 public health care facilities were designated as regional health care risk waste treatment sites. SCMS, the Swaziland Environmental Authority, and the Swaziland Ministry of Health's Environmental Health Department subsequently developed a training and certification program to ensure safe transport of health care waste, primarily by private sector providers.

Category	2011 – The way things were	Present - How far Swaziland has come
Infrastructure		
Heath care waste treatment capacity	A 2011 evaluation revealed that, of the 10 health care facilities designated as health care risk waste treatment sites, only one had an incinerator in good condition. Otherwise, five of the remaining incinerators were in fair condition, three were non-functional, and one site had no incinerator whatsoever.	The Swaziland MOH used SCMS technical assistance and USAID funding to rehabilitate incinerator housing, pre-destruction storage areas, and final disposal sites at seven health facilities, repaired two incinerators and replaced existing incinerators at four of these locations. Incinerator replacement and accompanying improvements will be conducted at four additional facilities through ongoing World Bank funding.
People		
Human resource capacity	Based on internal best practices, hospitals trained waste handlers—usually orderlies who perform a variety of other duties—on proper treatment of medical waste during job orientation. The Ministry of Health's Environmental Health Department also developed a largely unused training program, but it lacked standardization and a sound policy framework for health care waste management.	Using the SCMS-developed *National Guidelines on Health Care Waste Management* as a foundation, the MOH will collaborate with the World Bank to create and roll out a training program that operationalizes standardized waste management at all facility levels in the Swazi health care system. Furthermore, the Environmental Health Department will create a dedicated post for incinerator operators in the health care system going forward.

Highlights

Background

Faced with the world's highest HIV prevalence rate, the Swaziland Ministry of Health (MOH) has long pursued a multi-faceted approach to managing the virus. In 2011, this strategy included introduction of an aggressive campaign known as *Soka Uncobe* ("circumcise and conquer") to promote Voluntary Medical Male Circumcision throughout the 6,700-square mile kingdom.

Similar to many of its high-profile HIV initiatives, *Soka Uncobe* forced the MOH to not only consider the new resources it would need, but more basically, how well the existing Swazi health care system was responding to continued service demands. The Ministry and its partners unanimously recognized early-on that health care waste management (HCWM) suffered from a weak operational framework and rapidly declining infrastructure. SCMS consequently provided technical assistance and funding to update Swaziland's human and physical capacity to treat medical waste, particularly infection-bearing health care risk waste (HCRW).

Assessment

To assess the state of medical and laboratory waste management systems in Swaziland, a team of experts from SCMS, CDC, and USAID held a series of management interviews with MOH representatives and key stakeholders, and conducted site visits covering all six major Swazi hospitals, four health centers, and the Swaziland Health Laboratory Services in January 2011. Essential aspects of waste management were considered during these visits, including documentation, personnel, waste segregation, supplies, storage and transport, treatment, and final disposal.

The team concluded that there was an insufficient level of HCWM in the kingdom and that the government agency responsible for such lacked both the financial and human resources to resolve specific problems. Overall, it was recognized that Swaziland was fundamentally failing to meet its ongoing requirements due to ill-prepared personnel and deteriorating infrastructure. These two factors are indelibly linked—for example, handlers often severely overtax incinerators by unnecessarily using them to destroy non-infectious waste, which represents 85 to 90 percent of the total waste produced in most health care facilities and can be safely treated through pit burning. Mbabane Government Hospital Manager, Thoka Maseko, likens this to, "Stuffing 10 kilograms of dirty clothes into a 7 kilogram washing machine," but notes that the malpractice is most often committed by well-intentioned personnel who want to ensure no infectious waste escapes the system. This 'better-safe-than-sorry' approach ultimately compromises the efficiency and lifespan of incineration equipment, as exemplified by the fact that the only incinerator that was considered well-functioning during the SCMS assessment had fallen into permanent disrepair by 2014.

Figure 1 Personal protective equipment is indispensable for protecting HCRW handlers against infection.

Others working in Swazi health care facilities agree that purposeful overuse of incinerators is a major problem, but advise that a widespread lack of awareness over what constitutes proper HCWM is an equal concern. For example, Qinisile Ginindza is a Matron at Good Shepherd Mission Hospital in Siteki who readily admits that she viewed all medical waste as being the same before reading the updated HCWM guidelines. For his part, Piggs Peak Government Hospital orderly, Bhutana Matsebula, recounts that less-experienced personnel often disregard standard burning times. They instead believe that poking at disintegrating waste through a dangerously open incinerator door will speed up the process.

Still, the greatest consequence of sub-standard HCWM has always been the health risk it engenders. Inadequate use of personal protective equipment exposes incinerator operators to infection; non-secure storage puts hospital staff, patients, and visitors in contact with dangerous waste; and unsatisfactory transport methods such as dragging garbage bins along public roads, extends the risk of contact to the community at-large.

Beyond the waste destruction sites themselves, assessment

work also showed that Swaziland did not have a certification program to license transport companies that haul HCRW and other dangerous goods. Thus, critical oversight was absent at times when the general public had the highest risk of coming into contact with infectious waste—during its transport from any of the 256 health care facilities in Swaziland that lack incineration capabilities to the country's 10 destructions sites.

Implementation: developing guidelines

Improvement of Swaziland's HCWM system moved resolutely forward when the Ministry of Health published its *National Guidelines on Health Care Waste Management* and *Laboratory Waste Management Guidelines* in 2013. The guidelines were developed with lead technical assistance by SCMS and based primarily on South African national standards, thus introducing internationally-accepted practices and also ensuring that Swazi waste would be properly packaged for treatment in South Africa if cross-border services were ever required. Amidst meticulous detail, the guidelines fundamentally show that a robust system for mitigating human and environmental risks related to medical waste comprises nine basic features that integrate HCWM into the overall national waste management program:

Figure 2 HCWM system comprise nine basic features

1. Procurement planning that enables quality equipment and consumables to be obtained in an efficient, economical, and timely manner.
2. A process for segregating waste at its point of origin, based on the nature of the waste and using appropriate containers for identification, isolation, and storage.
3. Designated spaces, areas, locations or facilities that are used to store HCRW before its transfer to destruction sites, and minimum requirements and standards for maintaining these spaces.
4. Safe transfer and transport of waste using wheeled equipment on-site and secure, clearly-marked vehicles off-site.
5. Treatment technology choices that match the types of waste being treated, with alternatives to incineration or burning being considered where environmental concerns merit.
6. A quality management system comprised of monitoring and evaluation tools and mechanisms for feedback to facilities.
7. A national training course that ensures that standards and policies can be translated into action.
8. Standard operating procedures guidance, and job aids on such things as proper disinfection of instruments and surfaces, laundry management, and hand hygiene to ensure the safety of patients and health care personnel.
9. Ongoing assessment of health care practices in the country to inform the planning of implementation activities.

To facilitate utilization of the procedures stipulated in the guidelines—particularly before training was rolled out—SCMS created job aids, quick guides, and other information, education, and communications (IEC) materials that cover the following themes using easy-to-follow images and text:

Figure 3 An SCMS-developed job-aid on hand hygiene is posted above a sink

- Hand Hygiene - 12 Steps for Effective Hand Washing
- Health Care Waste Streams
- Infection and Sharps Safety
- Know Your Hazard Symbols
- Personal Protective Equipment for Incinerator Operators
- Personal Protective Equipment for Waste Handlers
- Spill Management: Emergency Response Plan
- Waste Category and Color-Coding Table
- Quick Guide to Disposing Laboratory Waste

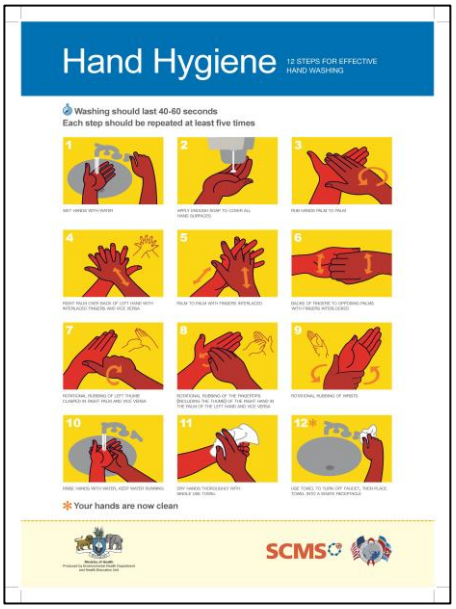

Figure 4 The Hand Hygiene poster is one of nine information, education and communication materials developed for this project

There is clearly very little wiggle room when it comes to waste management practices if infection and pollution are to be effectively averted, but SCMS's Nicole Pahl is careful to point out that Swaziland and many other client countries remain in resource-constrained environments that may require flexibility, when it can be afforded. For example, she explained that the recommended

practice of using dedicated polypropylene rigid plastics containers for anatomical and pathological waste would be prohibitively expensive in Swaziland since no such materials are available on the local market. Alternatives were therefore worked into the national guidelines, "But not so many that things would become unmanageable or sub-standard," Pahl added.

Implementation: waste transport

Separate from the assessment of HCMW practices in Swaziland, SCMS conducted a transport study to determine the best model for moving infectious waste from health care facilities without incinerators to appropriate treatment locations. Beyond the 10 hospitals and health centers where on-site incinerators could be justified by the amount of HCRW that they produced, health care facilities were mixing and burning the totality of their waste in adjacent open pits that should only be used for non-hazardous materials. As a remedy, SCMS concluded that existing facility incinerators should be designated as regional destruction sites. This was deemed a better option than constructing a centralized super-capacity incinerator.

With limited vehicle and personnel capacity in the public system, transport would rely heavily on private sector service providers. SCMS, the Swaziland Environmental Authority, and the Swaziland Ministry of Health's Environmental Health Department thus developed a training and certification program to help ensure the safe handling of HCRW between remote sites and incinerators. The program mobilized a highly sustainable public-private partnership model that is consistent with requirements established by the Government of the Kingdom of Swaziland, the U.S. National Institute for Occupational Safety and Health, and the U.S. Occupational Safety and Health Administration.

Implementation: establishing an M&E system

SCMS also collaborated with the Environmental Health Department to develop a suite of tools for routinely monitoring the compliance of health care facilities and biohazardous waste transporters with the newly adopted national HCWM guidelines. These represent an essential resource for quality assurance and systems strengthening.

Figure 5 Record-keeping for monitoring & evaluation is an essential but often-ignored aspect of HCWM

However, during early 2012 testing and validation of the tools with facility-level public health officers, SCMS perceived considerable weaknesses within the MOH network in terms of its basic M&E structure, particularly how data for decision making is expected to flow from lower levels of the health system to higher levels. SCMS thus stressed the need for an M&E capacity building solution to the MOH and its partners.

Implementation: planning rollout

Whereas development of Swaziland's new HCWM system had been achieved primarily through collaboration between the MOH and SCMS, rollout will be carried forward with support from the World Bank. SCMS built the roadmap for such a transition by organizing a workshop in the fall of 2012 to shape the *National Implementation Strategy*, comprising sequentially scheduled implementation activities with allocated roles and responsibilities. A centerpiece of the strategy is training of Infection Prevention and Control officers from each of Swaziland's incinerating facilities as HCWM trainers for staff at all 256 health care facilities in the country.

Although the workshop resulted in a well-defined National Implementation Strategy and reaffirmed committed ownership by the Government of the Kingdom of Swaziland, the event was also a reminder of the potential for M&E pitfalls in an otherwise substantially-improved HCWM framework. The MOH's M&E department did not participate in the workshop, thus a rollout plan could not be finalized for the monitoring tools that SCMS had developed.

Implementation: introducing capital improvements

In addition to its work on conceiving an HCWM system based on international standards and providing the tools for its realization, SCMS was responsible for targeted capital improvements that were also critical to the system's success. Most visible in this effort was the replacement of incinerators at four hospitals: Mbabane Government Hospital, Raleigh Fitkin Memorial Hospital (Manzini, Good Shepherd Hospital (Siteki), and Mankayane Regional Hospital. These facilities and three others—Hlatikhulu Hospital, Dvokolwako Health Centre, and Piggs Peak Hospital—also underwent rehabilitation of incinerator housing, pre-destruction storage areas, and final disposal pits for ash from both incinerated HCRW and open pit burning of non-infectious waste.

Figure 6 HCRW in red color-coded bags is ready for treatment in Good Sheperd Hospital's new incinerator

In detail, the renovation work performed included attention to windows, doors, frames, roofs, floors, and walls in incinerator housing and adjacent storage areas; fencing and gates around housing and disposal pits; and fittings and equipment for incinerators, such as temperature gauges and chimney stabilizers. While all upgrades helped improve the viability of aging infrastructure, others were more urgent and essential to ensuring safety. For example, combustible wood roofs found at some of the incineration sites were replaced with slate.

SCMS engaged Swazi firm, Phakamile Engineering (Pty) Ltd, to draft technical specifications and manage the improvements, which were then carried out through concurrent work by two local construction outfits. "The split team approach first and foremost allowed us to complete work at widely dispersed sites in a quicker timeline," explains Phakamile representative, Welcome Thwala. "But, it also gave us the luxury of instant substitutability had one company failed to deliver, and even improved results because informal competition over quality developed between the two groups."

Thwala provided another observation that powerfully showed how capital improvements gave momentum to the program as a whole. "We often talk about the need to gain the buy-in and ownership of health care facilities when it comes to quality improvement, but this becomes hard because administrators and staff members have become used to broken promises," he first lamented. "The USAID-funded capital improvements were carried out according to plan and with the regular presence of Swazi government representatives to check on progress, which served to build enthusiasm within the facilities and motivated key staff members to provide critical assistance with the capital improvement process," Thwale confidently stated.

Raleigh Fitkin Memorial Hospital		Good Shepherd Hospital
	Before	
	During	
	After	

Mbabane Government Hospital (Incinerator House)

Mankayane Government Hospital (Infectious Waste Storage Area)

Dvokolwako Health Center (Incinerator House)

What's next?

As SCMS concluded its program, collaboration had begun between the Swazi Ministry of Health and the World Bank to develop and deliver a curriculum that will be used country-wide to operationalize the *National Guidelines on Health Care Waste Management*. In addition to training, support from the World Bank will also be used to continue capital improvements by replacing incinerators and upgrade corresponding infrastructure at four health care facilities. At the same time, the Environmental Health Department is planning to create a dedicated post for incinerator operators in the health care system going forward.

With such momentum building for implementation, SCMS's concern for the viability of M&E activities within the new HCWM system has grown more urgent. Continuing to underemphasize M&E capacity will impede sustainability and risk dooming newly-installed infrastructure to the same inoperable fate as the equipment it replaced. Maqhawe Magongo is confident that this challenge will soon be met, though. He advises, "The Government of the Kingdom of Swaziland does not squander capital improvements." Magongo and his colleague, Bongani Sigudla, are MOH Environmental Health Officers who provided leadership and oversight on behalf of their government throughout SCMS's technical assistance activities.

Putting it all in perspective

There is no doubt that efficient management of waste is essential to controlling infection wherever health services are provided. Still, there is an even greater context to HCWM, according to Swaziland's Director of Health Services, Vusi Magagula. Speaking at a May 2014 event to mark the hand-over of SCMS's successful technical assistance program, Magagula made it clear that, "Waste management is a key image-builder for a health facility in the eyes of the community," concluding that the biggest benefit of all is increased care-seeking that comes from public confidence in the services they'll receive.

Figure 7 Resources from SCMS' experience in Swaziland and its overall expertise in HCWM are now available in a special section of the project's website, go to http://scmswetst.pfscm.org/hcwm/